Outgoing

State of Utah
DEPARTMENT OF NATURAL RESOURCES

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October 5, 2007

Kennecott Utah Copper Corporation
Attn: Rowan Jackson-McGowan
P.O. Box 6001
Magna, Utah 84044-6001

Subject: Comments Regarding Notice of Violation (NOV) Item 2 and Item 4, Kennecott Utah Copper Corporation, Bingham Canyon, M/035/002, Salt Lake County, Utah

Dear Mr. McGowan:

The Division has reviewed the erosion control designs and the Call and Nicholas Inc. Risk Assessment. The following evaluation is in abbreviated form since the Division anticipates further detailed discussion regarding each of the items contained in the NOV.

ITEM 2, Erosion Control Design:
The erosion and sediment control plan submitted to the Division of Oil, Gas, and Mining and officially submitted to the Division of Water Quality in July of 1996 is incomplete and fails to accurately identify the most important components of the hydrology and sedimentology of the watershed. The Yosemite Drainage Storm Water Facility Design Review uses the very basic Rational Formula to calculate runoff. The Rational Method is based on the formula, Qp=CIA, where Qp is an estimate of the peak flow only. The point being, that the design of the facility in question did not incorporate a comprehensive analysis of the contribution of sediment or debris. The design capacity was based on 10 year 24 hour precipitation event and failed to give the most important debris and sediment component it's necessary importance in the design of these structures. It does not mean that sediment was not considered, but just not accurately defined.

It is essential that Kennecott consider what they want to accomplish when designing their storm water treatment facilities. The facilities, mine waste dumps, have been in place for 100 plus years and will be in place for many more years. If Kennecott and the Division agree, that the purpose of designing a facility to treat storm water runoff, debris flows, and sediment, is to prevent deleterious material (i.e. sediment and debris) from entering Butterfield Creek, then a more comprehensive look at the debris flow and sediment design component will need to occur, as well as, the probability occurrence.

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Therefore, in conclusion, it is the Division's hydrologist's opinion that the designs of water and sediment control structures treating drainage flowing into Butterfield Creek will have to be adjusted to prevent future releases of sediment and debris. This does not mean that successes have not occurred from a groundwater treatment perspective. It just means that Kennecott needs to spend the same amount of energy designing facilities, which prevent future releases of sediment and debris.

ITEM 4, Risk Assessment:
Call and Nicholas, Inc. submitted a risk assessment of the Bingham Waste Dumps (which includes the south dumps where Yosemite Dump is located) to Mr. Zavis Zavodni of Rio Tinto Technical Services in April 2004. The assessment establishes a qualitative overview of probability of risk regarding certain flows, failures, and ARD based on Rio Tinto likelihood and consequence classifications established by Rio Tinto. Although the Kennecott letter of August 16, 2004, identifies the Call and Nicholas, Inc. memo as a slope stability study, the Division disagrees, and believes a slope stability study must *quantify* the risks that have not only been identified in the Call and Nicholas risk assessment, but would include other quantifiable measures as well.

In section 4.4.4, of the Kennecott Reclamation and Water Management Plan (plan), it was explained that a detailed assessment of each of the six drainages would identify the risk of contaminated water and sediment release. The Call and Nicholas Inc. assessment addressed the risk associated with shallow surface slumps, debris flows, deep-seated large-scale failures, and acid rock drainage, which in essence addressed the vulnerable areas and the types of failures that can occur that result in sediment and contaminated water release. It did not assess each of the six drainages in detail as the plan identified and committed to.

Even so, the Call and Nicholas, Inc. memo stated some risks associated with sediment release from the south dumps including clearly stated observations that the south dumps are vulnerable to shallow surface slumps and debris flows. It was suggested that additional check dams and control of the surface water at the dump(s) surface would advert the potential problems on a temporary basis. Furthermore, the memo indicated that capturing run off above the dumps should be re-evaluated and the top surface of the dumps should be regraded to control flow.

The Division believes the risk assessment revealed valuable information to Kennecott. The hazard evaluation imposed a risk level of 5 (out of 7) for shallow surface slumps and debris flow at the south dumps, indicating there is over a 70% chance of these types of

events occurring. The Division considers these as highly foreseeable and known risks that had potential for an adverse outcome if no suitable and effective measures to control flow of any kind were implemented on a temporary or permanent basis.

Although the Call and Nicholas report provided an example of a rain event, which resulted in a 1997 off-site debris flow in the Olsen drainage, it did not necessarily mean this type of outcome would occur during heavy rain only. Call and Nicholas explained that the south dumps are vulnerable for a couple of reasons, but did not indicate these failure modes are likely to occur *only* in a severe rain event. Certainly, one must study, measure, and evaluate this information to initiate a design that will contain flow and maintain stability. This investigation has not been performed. Further discussion is encouraged to identify the specific quantifiable variables that will result in a successful design and control optimization outcome.

If there are questions or inquiry required for clarification or other purposes, please contact Ms. Beth Ericksen regarding item 4 or Mr. Tom Munson about item 2. Ms. Ericksen and Mr. Munson are in regular communication with each other, so pertinent information resulting from any item discussions will be appropriately exchanged.

Sincerely,

Mary Ann Wright
Associate Director, Mining

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